



Taking the renewable road

With a target of generating 25 per cent of its power from green sources, Tata Power is exploring new initiatives in hydro, wind, solar and geothermal energy

Tata Power, India's largest private thermal power generator, is going all out to increase its focus on clean energy. The company is focusing on clean technology for power generation, even for its thermal plants, and has embarked on exploring fresh options for wind, geothermal and solar energy generation. The new mantra at Tata Power, a company with a legacy of starting out as India's first hydro-power generation company, is clean, green and carbon neutral.

"Our target is to significantly increase the ratio of clean and renewable energy," says Banmali Agrawala, Tata Power executive director, strategy and business development. "By 2017, we aim to have 25 per cent of our total power generation from renewable and carbon neutral sources."

The company is well on the path towards renewable energy — about 20 per cent of the electricity generated by Tata Power today is 'clean', ie, it is produced and managed in ways that ensure a carbon-neutral environmental impact. But the challenge for the company to touch the 25 per cent level is going to get much tougher — by the time it completes on-going thermal power projects at Maithon, Mundra and Jojobera, its proportion of clean energy generation will be down to 16 per cent by 2012.

To offset this, the company has consciously embarked on several new initiatives, a key component of which involves reducing the carbon impact of thermal power.

Cleaner thermal power

Thermal power is the biggest egg in Tata Power's

energy generation basket — about 1,838MW of its total power production of 2,900MW is based on thermal sources such as coal. India in fact relies more on thermal power than all other sources put together, with about 65 per cent of the country's 132,000MW capacity being thermal-based.

Tata Power is currently executing thermal power projects that will add another 5,170MW to its capacity. Over the years, Tata Power has invested substantially in improved technology as well as management and design practices in thermal power generation. "We have instituted measures to not only cut down carbon emission, but also burn coal more efficiently," says Mr Agrawala.

At the Mumbai-based Trombay thermal power plant alone, over Rs1,000 million (\$21.7 million) has been invested in various 'clean' measures, including the installation of India's first flue gas desulphurisation plant and electrostatic precipitators of 99.5 per cent efficiency. The company has adopted the ammonia injection method to control SPM (suspended particulate matter) levels in the air and undertaken construction of monstrously tall chimneys (up to 275m) that help lower ground-level concentration of pollutants. It also imports cleaner coal with lower sulphur and ash content.

All Tata Power thermal power generation stations have instruments for continuous online sampling and analysis of the flue gases, closed circuit television for monitoring stack emissions and a continuous ambient air monitoring station. The Trombay power station has also developed an in-house technology in collaboration with Delhi-based The Energy and Resources Institute for treating oily sludge in an eco-friendly manner.

At Mundra (in Gujarat), where the company is building one of India's biggest coal-fired plants, an ultra mega power plant of 4,000MW, Tata Power is not only instituting all these measures, but has also opted for supercritical technology — India's first private sector thermal power project to do so — to make it the country's most energy-efficient power plant. The project will have the world's lowest greenhouse gas emission levels — 18 per cent lower than best-in-class plants and 40 per cent more efficient than any other coal-based power plant in India.

The renewable route

Hydropower remains Tata Power's biggest source for renewable energy. It has recently tied up with Norway-based SN Power for joint hydel projects that will develop 2,000MW in hydropower in India and Nepal. But the company has also continuously maintained a focus on wind energy. Its wind energy installation at Visapur in Maharashtra's Satara district is India's largest unit, with 50 windmills, each powering 2MW turbines, each with rotors spanning 83-84m and each rotor balanced atop 80m poles. It has a 100MW-capacity wind energy farm under construction in Gujarat. The company is looking for other viable locations in Maharashtra, Gujarat, Karnataka and Tamil Nadu. By 2017, it expects to generate 2,000MW wind energy.

"Recent policy initiatives by the Central Electricity Regulatory Commission have given a boost to wind-generated energy but states need to take more initiatives and partner with producers to make this a more popular option," says Mr Agrawala. The partnership could cover a range of activities from policy-making to making wind energy a more attractive and more cost-effective option, and actively engaging in identifying potential sites to facilitating grid connectivity.

"India has moderate wind speeds," explains Mr Agrawala, "therefore, the locations where wind energy farms can be viably set up are limited. This impacts the cost per unit. Wind energy is currently expensive, but larger farms would bring down the cost. In India, optimum efficiency would be achieved with windmills powering 5MW turbines."



"Renewable sources depend on nature ...which can be unpredictable. The best option is to go for a combination of conventional and non-conventional renewable sources"

Banmali Agrawala

Natural heat

Although Tata Power set up Tata BP Solar as an associate company to manufacture and market solar energy products, it also produces about 60MW solar power on its own. It expects to be producing an additional 50MW solar power within the next year with the aim of increasing this to about 250MW of solar energy by 2017. "With the setting up of the National Solar Mission, this area has received a huge boost," says Mr Agrawala. "The government has also recently announced subsidies for the manufacture of photovoltaic panels, which will further advance this sector."

A frontier initiative that Tata Power has recently entered into is geothermal energy production. It has signed a memorandum of understanding with the state government of Gujarat for exploring the potential in this field.

"We are focused on energy sources that are more environment-friendly and sustainable in the long run," says Mr Agrawala. "Sustainability is decided as much on issues of sustainable resources as on sustainable commercial viability." For production of a unit of wind-generated energy, the investment involved is about Rs60 million; production of a unit of solar energy requires about Rs150 million; and production of a unit of geothermal energy is expected to require investments to the tune of Rs120 million. However, as Mr Agrawala points out, technology in these areas is evolving so rapidly, the numbers could change within years. "Renewable sources depend on nature, on natural movements and developments, which can be unpredictable. The best option is to go for a combination of conventional and non-conventional renewable sources," he adds.

The company, a signatory to the global 3C Initiative (to combat climate change), is also pursuing measures to reduce the carbon footprint of its plants as well as the company as a whole. Tata Power believes that "even carbon capture and re-use could solve the problems of climate change," as Mr Agrawala says. The Tata Power Energy Club, a community programme to create social awareness about energy conservation, is targeting internal audiences as well as communities around its offices and plants, beginning with schoolchildren in Mumbai. "Becoming carbon neutral as a community is difficult without the active participation of the community," says Mr Agrawala. "We can reduce our carbon footprint by being less wasteful."

With a conscious corporate policy of going the clean and green route, Tata Power is focusing not just on generating less carbon-intensive power, but also on reducing its environmental impact and use of natural resources. The need is, clearly, not just to light up the planet but to save it for generations to come. ●

Suchita Vemuri